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(54) Bowl mounting mechanism

(57) A mixer 10 comprises a mixer body 12 having a motor for driving a mixing element 16 and a bowl 18 for receiving a material to be mixed. The mixer further includes pins 24, 26 mounted on the bowl 18 and mounting brackets 32, 34 mounted on the mixer body or alternatively, the mixer includes pins 24', 26' mounted on the mixer body and mounting brackets 30', 36' on the bowl. The mounting brackets have openings sized to receive the pins therein whereby the bowl can be removably coupled to the mixer body.

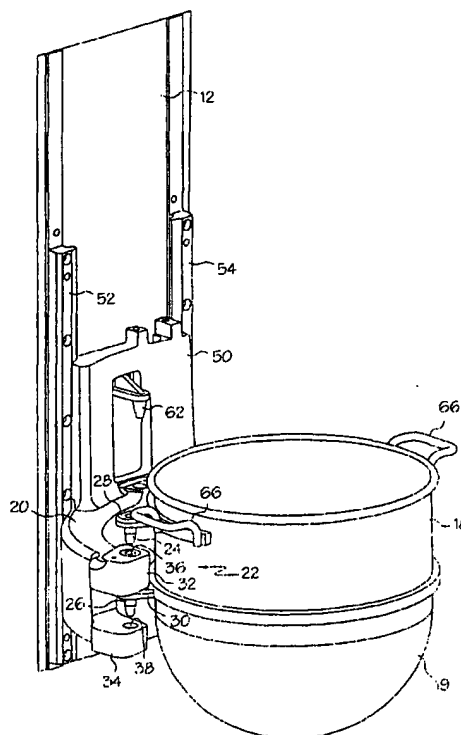


FIG. 2

Description

BRIEF DESCRIPTION OF THE DRAWINGS

BACKGROUND OF THE INVENTION

[0008]

[0001] The present invention is directed to a mechanism for mounting a mixer bowl to a mixer body, and more particularly, to a mechanism for pivotably mounting a mixer bowl to a mixer body.

[0002] Mixers are used to mix and blend a wide variety of products, such as food, chemicals, etc. The mixers typically include a mixer body having a motor that drives a generally vertically-extending mixing element. The mixers include a bowl that is located below the mixing element, and receives the mixing element and the materials to be mixed. The bowl is typically detachable from the mixer body to aid in loading and unloading the products into the bowl.

[0003] In most existing mixers, the mixer bowl is vertically movable such that the bowl can be lowered away from the mixing element and an overhang portion of the mixer body. The products to be mixed can then be added or removed from the bowl, or the bowl can be detached from the mixer body. However, even after the bowl is lowered, it can be inconvenient for the user to access the mixer bowl due to the location and orientation of the mixer body (more particularly, the overhang portion) relative to the mixer bowl.

[0004] Accordingly, there is a need for a mechanism for mounting a mixer bowl to the body of the mixer which improves the user's access to the mixer bowl, and is thereby more convenient to use.

SUMMARY OF THE INVENTION

[0005] The present invention is a mechanism for coupling a mixer bowl to a mixer body such that the mixer bowl can be pivoted away from the mixer body and quickly and easily coupled and uncoupled from the mixer body. The mechanism enables the bowl to pivot away from the mixer body, which improves access to the bowl and is more convenient to use.

[0006] In a preferred embodiment, the invention is a mixer comprising a mixer body having a motor for driving a mixing element, the mixer including a bowl for receiving a material to be mixed. The mixer further includes a pin mounted onto one of the mixer body or the bowl, and a mounting bracket mounted onto the other of the mixer body or the bowl. The mounting bracket has an opening sized to receive the pin therein to removably couple the mixer body and the bowl.

[0007] Other objects and advantages of the present invention will be apparent from the following description and the accompanying drawings.

Fig. 1 is a perspective view of a mixer including one embodiment of the mounting mechanism of the present invention;

Fig. 2 is a perspective view of part of the mixer of Fig. 1, with the mixer bowl spaced slightly away from the mixer body;

Fig. 3 is a perspective view of the mixer body and mixer bowl of Fig. 2, with the bowl coupled to the mixer body and in the loading position;

Fig. 4 is a perspective view of the mixer body and mixer bowl of Fig. 3, with the mixer bowl in its closed position;

Fig. 5 is a perspective view of the mixer body and mixer bowl of Fig. 4, with the mixer bowl in its use position;

Fig. 6 is a perspective view of a portion of a mixer body and a mixer bowl illustrating an alternate embodiment of the mounting mechanism of the present invention; and

Fig. 7 is a perspective view of a portion of a mixer body and a mixer bowl illustrating an alternate embodiment of the detent mechanism.

DETAILED DESCRIPTION

[0009] Fig. 1 illustrates a mixer, generally designated 10, which includes a mixer body 12 having a generally vertically-extending main portion 13, and an overhang portion or transmission head 14. A generally downwardly-extending mixing element 16 (such as a hook) is removably connected to the mixer body 12 by a coupling component (not shown), such as a bayonet-style attachment that is well known in the art. The mixer 10 includes a motor (not shown) that rotates the mixing element 16 about its central axis. A mixer bowl 18 is mounted to a yoke 20 of the mixer body 12, which is shaped to closely receive the mixer bowl 18 therein. The mixer bowl 18 includes a bowl body 19 that contains the products to be mixed (not shown). A mounting mechanism, generally designated 22, pivotably couples the bowl 18 to the yoke 20 and mixer body 12.

[0010] As shown in Fig. 2, the mounting mechanism 22 includes a pair of downwardly-extending pins 24, 26, each pin being mounted to the mixer bowl 18 by a pin arm 28, 30 that protrudes generally radially outwardly from the bowl body 19. The mounting mechanism 22 further includes a pair of brackets 32, 34 that are mounted (preferably by casting) onto a distal end of the yoke 20, each bracket 32, 34 having a hole 36, 38 formed therein. As shown in Fig. 2, the pins 24, 26 are generally axially aligned, as are the holes 36, 38. To mount the mixer bowl 18 to the mixer body 12, the bowl 18 is positioned such that the pins 24, 26 are aligned with the holes 36, 38 in each bracket 32, 34, as shown in Fig. 2.

The mixer bowl 18 is then lowered such that the pins 24, 26 are received in the corresponding holes 36, 38, and the pin arms 28, 30 engage the top surface of the corresponding mounting bracket 32, 34, as shown in Fig. 3. After each pin 24, 26 is received in a hole 36, 38, each pin/bracket combination forms a hinge about which the mixer bowl 18 can pivot, and the bowl 18 is shown in its loading/unloading position in Fig. 3. The pins 24, 26 preferably have tapered tips to guide the pins 24, 26 into the mounting brackets 32, 34.

[0011] The mixer bowl 18 can then be pivoted to its closed position, as shown in Fig. 4. In this position, the mixer bowl 18 is received within the yoke 20, and the bowl 18 is aligned such that the mixing element 16 can be received in the mixer bowl 18 when the mixer bowl is raised relative to the mixing element. As shown in Fig. 3, the mixer 10 preferably includes a detent mechanism, generally designated 40, to maintain the bowl 18 in its closed position. The detent mechanism 40 is preferably located on an opposed side of the bowl 18 relative the hinge mechanism 22. In the illustrated embodiment, the detent mechanism 40 includes a relatively soft, deformable washer 42 having an opening formed 44 therein mounted on the yoke 20. The detent mechanism 40 also includes a forwardly extending peg 46 mounted on the bowl 18. The opening 44 in the washer 42 is slightly smaller than the largest portion of the peg 46, such that when the mixer bowl 18 is moved to its closed position, the peg 46 is forced into the washer 42, which retains the peg 46 therein by an interference fit. In this manner, the detent mechanism 40 helps to maintain the mixer bowl 18 in the closed position.

[0012] An alternate embodiment of the detent mechanism 40' is shown in Fig. 7. In this embodiment, the peg 46 is mounted onto a washer 47, and the yoke has a recess 49 shaped to receive the washer 47 therein. In this manner the yoke 20 helps to support the weight of the bowl 18 when the washer 47 is received in the recess 49. Of course, a wide variety of mechanisms may be used to maintain the bowl 48 in the closed position, including a variety of latches, hooks, interengaging geometries, clasps, clips, frictionally engaging surfaces, magnets and the like. The portion of the detent mechanism located on the bowl can be located on any surface of the bowl that can be received in a corresponding part located on the mixer body. Preferably, the portion of the detent mechanism located on the bowl is located on some portion of the bowl that is located adjacent the yoke when the bowl is in the closed position.

[0013] In order to move the bowl from its closed position (Fig. 4) to its use position (Fig. 5), the yoke 20 is raised vertically by moving the yoke base 50 along a pair of vertically-extending tracks 52, 54. Typically, a crank (not shown) or some other similar mechanism is used to raise the yoke 20. As the yoke 20 is raised, it also raises the bowl 18 to its use position, as shown in Figs. 1 and 5. When the bowl 18 is in the use position, the mixing element 16 can be received in the bowl 18

such that the mixing element 16 can mix the contents of the bowl 18. The mixer bowl 18 includes a locking bracket 60 (Fig. 4) having an opening 64, and the mixer body 12 includes a generally downwardly-extending locking pin 62. When the mixer bowl 18 is moved to its use position (Fig. 5), the locking pin 62 is received in the opening 64 in the locking bracket 60 to retain the mixer bowl in the use position; that is, the locking pin/locking bracket combination prevents the mixer bowl 18 from pivoting about the mounting mechanism 22.

[0014] The mounting mechanism 22 enables the mixer bowl 18 to be pivoted out from under the overhang portion 14 of the mixer body 12 to its loading/unloading position (Fig. 7). This provides easier access to the bowl 18 for loading and unloading materials in the bowl, and is therefore more convenient to use. When the bowl 18 is pivoted into its loading/unloading position, it is also easier to grip and lift the mixer bowl off of the yoke 20 and to mount the mixer bowl 18 back onto the yoke 20. For example, when in the loading/unloading position both handles 66 of the bowl 18 are pivoted away from the mixer body 12, and can be easily gripped by the user without having to maneuver around the overhang portion 14 of the mixer body 12.

[0015] Any variety of pins and brackets may be used for mounting the mixer bowl 18 to the mixer body 12. For example, nearly any shape pin 24, 26, preferably having a generally circular, or nearly circular (i.e. hexagonal, elliptical, etc.), cross section, may be used. Furthermore, as shown in Fig. 6, the pins 24', 26' may be located on the yoke 20, and the pin arms 28', 30' may have holes 36', 38' therein such that the pin arms 28', 30' form the mounting brackets. Similarly, the peg 46 of the detent mechanism 40 may be located on the mixer body 12 and the washer 42 may be located on the bowl 18. The locking bracket 60 may be located on the bowl 18 and the locking pin 62 may be located on the mixer body 12. The holes 36', 38' may be located on nearly any surface of the yoke 22 or of the mixer body 12. For example, the holes 36', 38' in the embodiment shown in Fig. 6 may be located on a lip (not shown) or other various mounting surfaces of the mixer body 12.

[0016] The features disclosed in the foregoing description, in the following claims and/or in the accompanying drawings may, both separately and in any combination thereof, be material for realizing the invention in diverse forms thereof.

Claims

1. A mixer comprising:

- a mixer body having a motor for driving a mixing element;
- a bowl for receiving a material to be mixed;
- a pin located on one of said mixer body or said bowl; and

- a mounting bracket located on the other of said mixer body or said bowl, said mounting bracket having an opening sized to receive said pin therein to removably couple said mixer body and said bowl. 5
2. The mixer of claim 1 wherein said pin has a generally circular cross section.
3. The mixer of claim 1 wherein said pin and said mounting bracket form a hinge about which said bowl can pivot. 10
4. The mixer of claim 3 wherein said bowl can pivot between a closed position, wherein said bowl is located adjacent said mixer body, and a loading position wherein said bowl is not located adjacent said mixer body. 15
5. The mixer of claim 4 further comprising a detent mechanism that maintains said bowl in said closed position. 20
6. The mixer of claim 5 wherein said detent mechanism includes a peg located on one of said mixer body or said bowl and a washer having an opening for receiving and retaining said peg therein located on the other of said mixer body or said bowl. 25
7. The mixer of claim 1 wherein said mixer body includes a yoke, and wherein said pin or said mounting bracket mounted on said mixer body is located on said yoke. 30
8. The mixer of claim 7 wherein said pin or said mounting bracket is mounted on a distal end of said yoke. 35
9. The mixer of claim 7 wherein said yoke is shaped to engage an outer surface of said bowl when said bowl is located adjacent said yoke. 40
10. The mixer of claim 1 wherein said pin extends generally downwardly and is located on said bowl, and wherein said mounting bracket is located on said mixer body. 45
11. The mixer of claim 1 further comprising an auxiliary pin mounted onto one of said mixer body or said bowl and an auxiliary mounting bracket mounted onto the other of said mixer body or said bowl, said auxiliary mounting bracket having an opening sized to receive said auxiliary pin therein to removably couple said mixer body and said bowl. 50
12. The mixer of claim 11 wherein said pin and said auxiliary pin are both mounted onto one of said mixer body or said bowl, the axes of said pin and said auxiliary pin being generally aligned, and wherein said mounting bracket and said auxiliary mounting bracket are both mounted onto the other of said mixer body or said bowl, and the holes of said mounting bracket and said auxiliary mounting bracket being generally aligned. 55
13. The mixer of claim 1 further comprising a locking pin mounted onto one of said mixer body or said bowl and a locking bracket mounted onto the other of said mixer body or said bowl, wherein said locking pin is received in said locking bracket to couple said bowl and said mixer body when said bowl is raised relative said mixer body.
14. A mixer bowl for mounting to a mixer body comprising:
- a bowl body for receiving material to be mixed; and
- a pin shaped to be received in an opening in said mixer body to pivotably mount said bowl to said mixer body.
15. The mixer bowl of claim 14 further comprising an arm extending generally radially outwardly from said bowl, said pin being coupled to and extending generally downwardly from said arm.
16. The mixer bowl of claim 14 further comprising an auxiliary pin shaped to be received in an opening in said mixer body to pivotably mount said bowl to said mixer body.
17. The mixer bowl of claim 16 wherein said auxiliary pin and said pin are axially aligned.
18. A mixer bowl for mounting to a mixer body comprising:
- a bowl body for receiving material to be mixed; and
- a mounting surface coupled to said bowl body and having an opening shaped to receive a pin of said mixer body therein to pivotably mount said bowl to said mixer body.
19. The mixer bowl of claim 18 wherein said mounting surface includes an arm extending generally radially outwardly from said bowl body and said opening has a central axis that extends generally vertically.
20. The mixer bowl of claim 18 further comprising an auxiliary mounting surface coupled to said bowl body and having an opening shaped to receive an auxiliary pin of said mixer body therein to pivotably mount said bowl to said mixer body.

21. The mixer bowl of claim 20 wherein said openings of said mounting surface and said auxiliary mounting surface are aligned.

22. The mixer bowl of claim 14 or claim 18 further comprising a first detent mechanism mounted on said mixer body for preventing said mixer bowl from pivoting relative said mixer body. 5

23. The mixer bowl of claim 22 wherein said first detent mechanism is located on an opposed side of said bowl body relative to said opening in said mounting surface. 10

26. The mixer bowl of claim 22 wherein said bowl is pivotable between a closed position wherein said bowl is located adjacent said mixer body and a loading position wherein said bowl is generally not located adjacent said mixer body, and wherein said detent mechanism is located on a portion of said bowl that is located adjacent said mixer body when said bowl is in said closed position. 15 20

25. The mixer bowl of claim 22 wherein said first detent mechanism is located on an opposed side of said bowl body relative to said pin. 25

26. The mixer bowl of claim 22 wherein said first detent mechanism includes a generally forwardly-extending peg. 30

27. The mixer bowl of claim 18 further comprising a locking bracket having an opening, said locking bracket being located to receive a locking pin of said mixer body therein when said mixer bowl is raised relative said mixer body. 35

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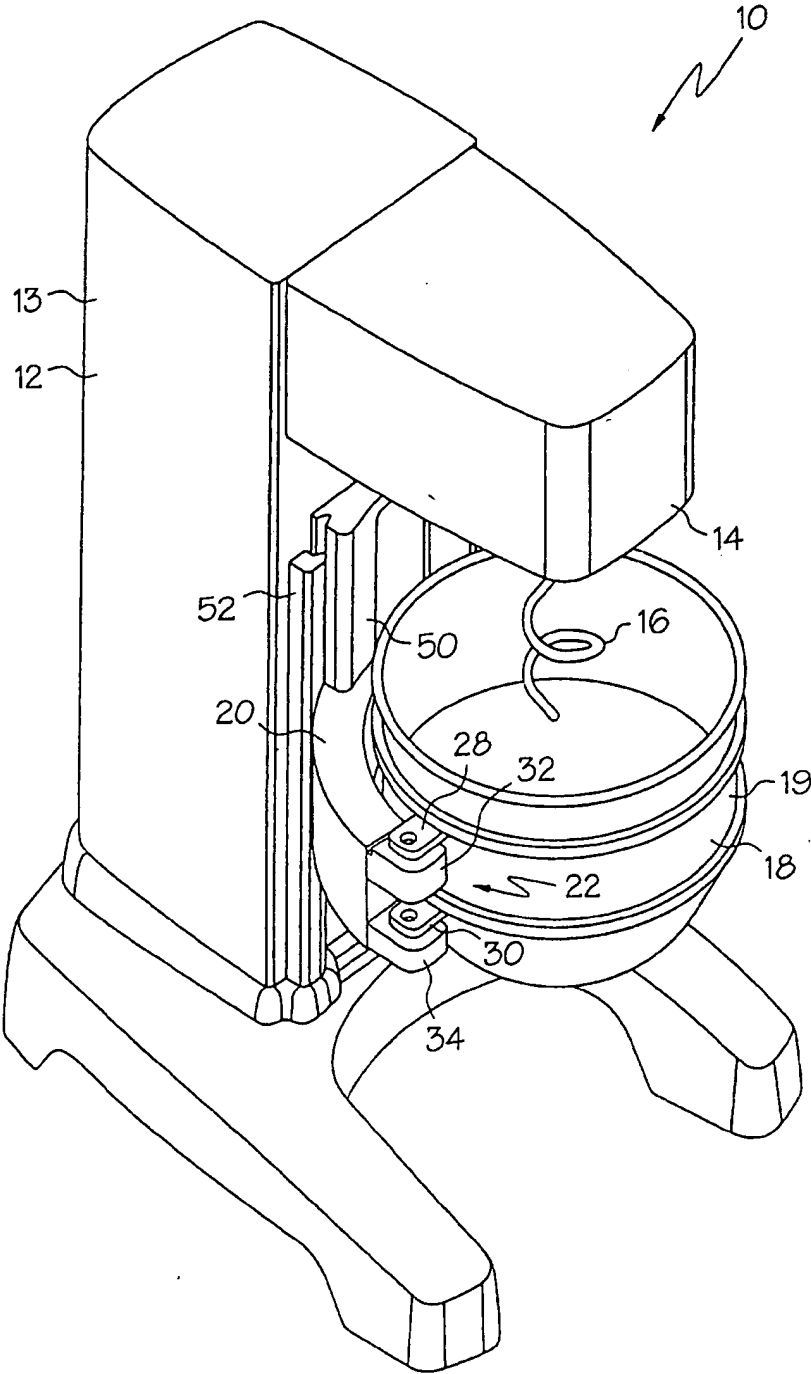


FIG. 1

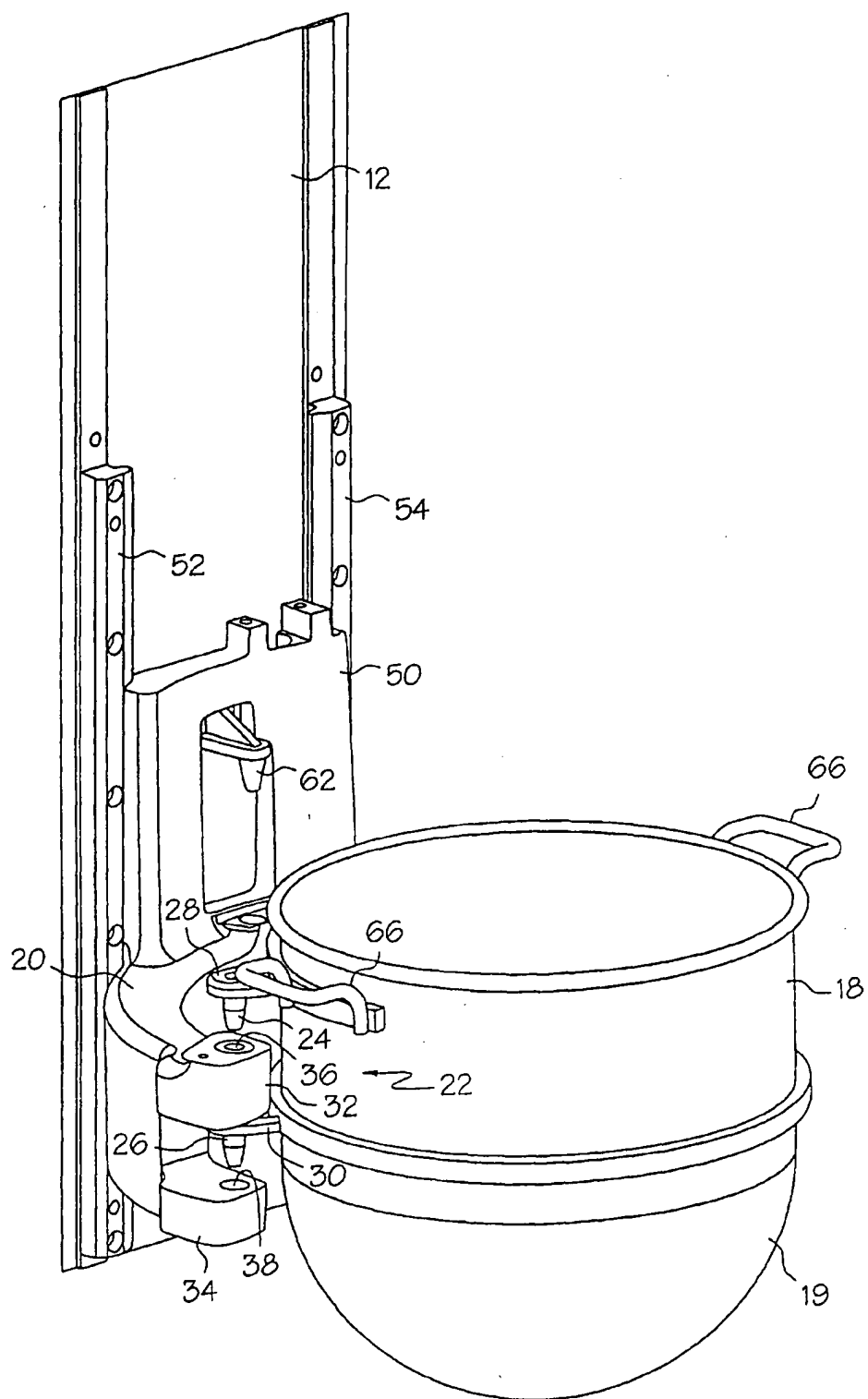


FIG. 2

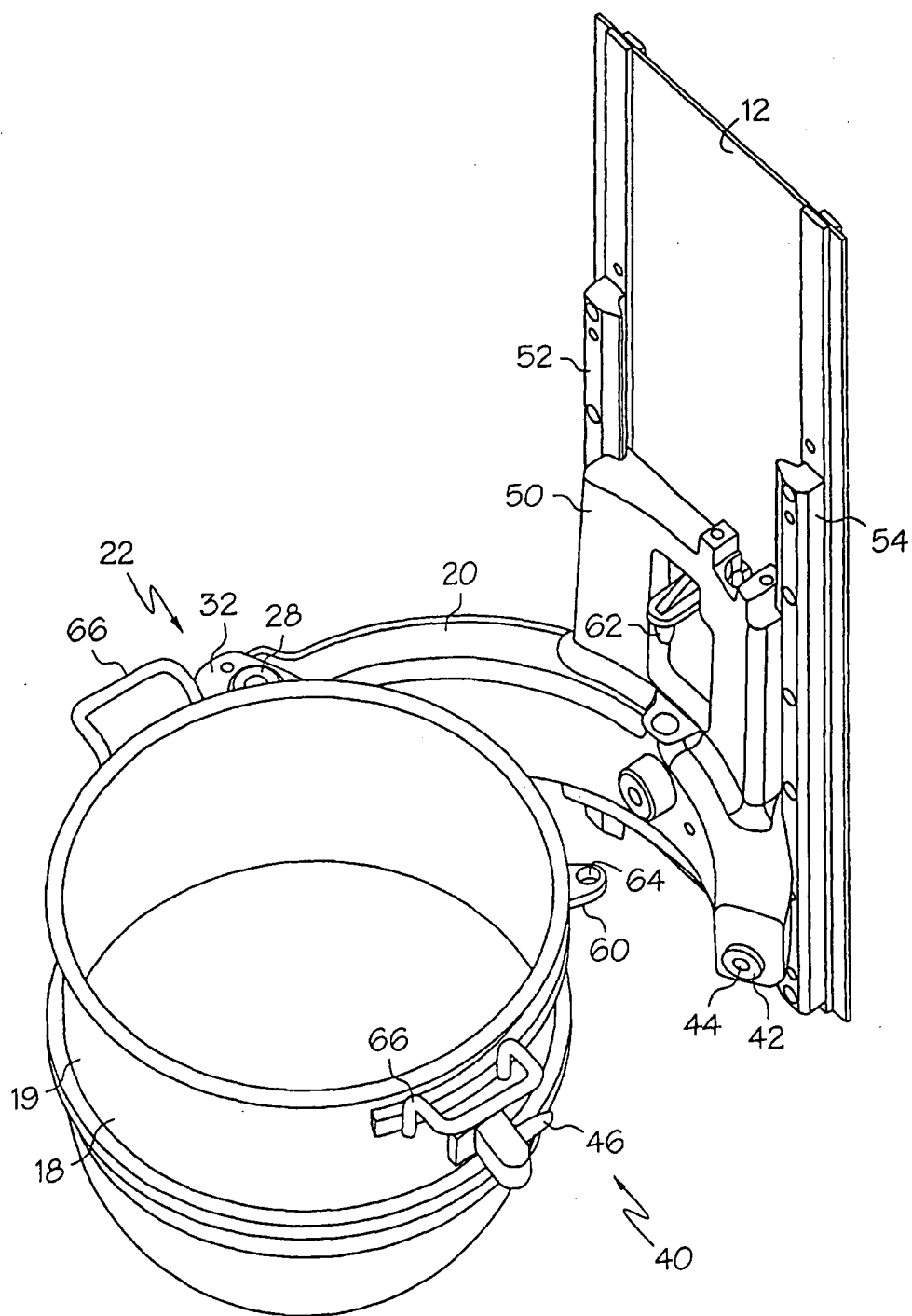


FIG. 3

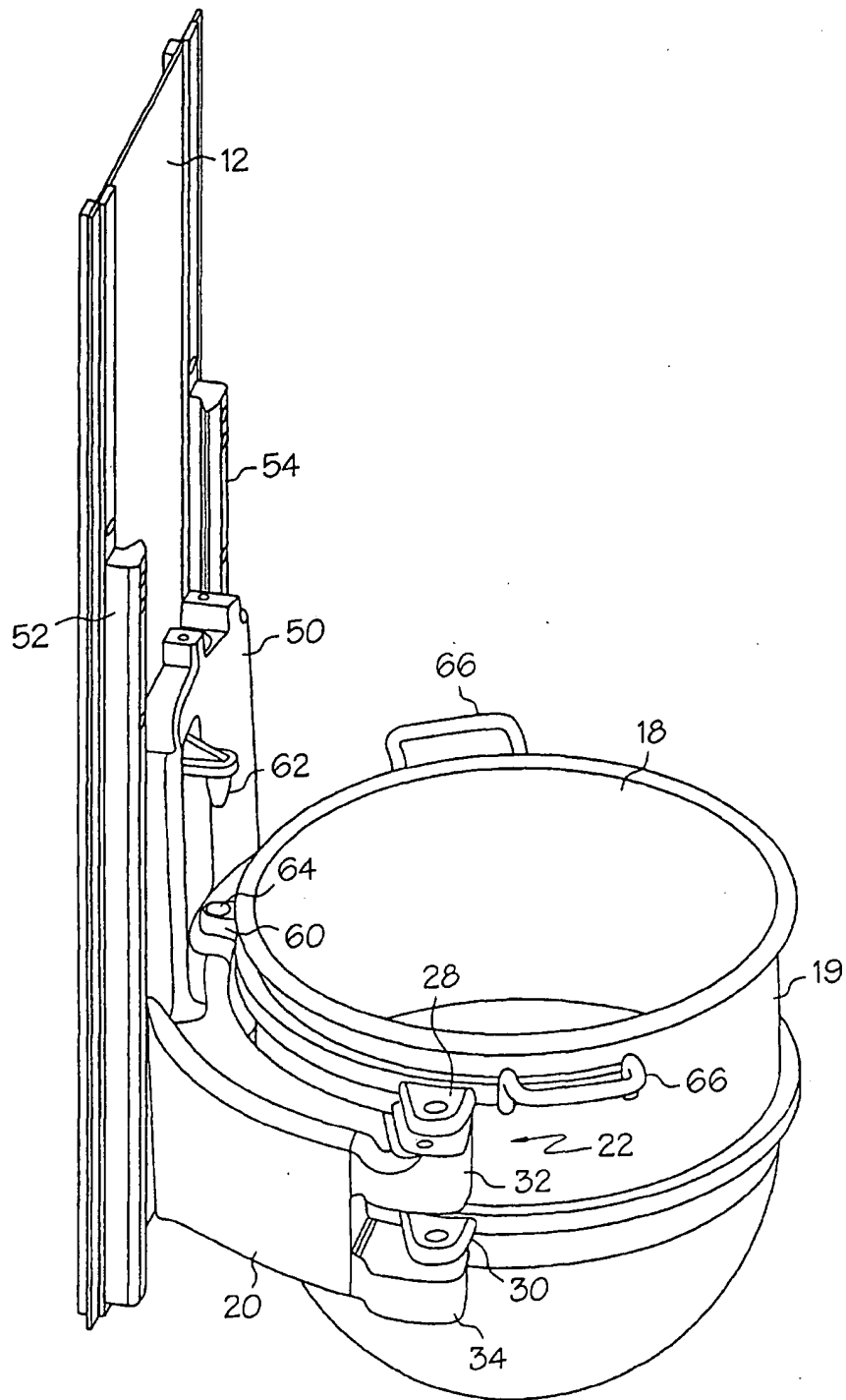


FIG. 4

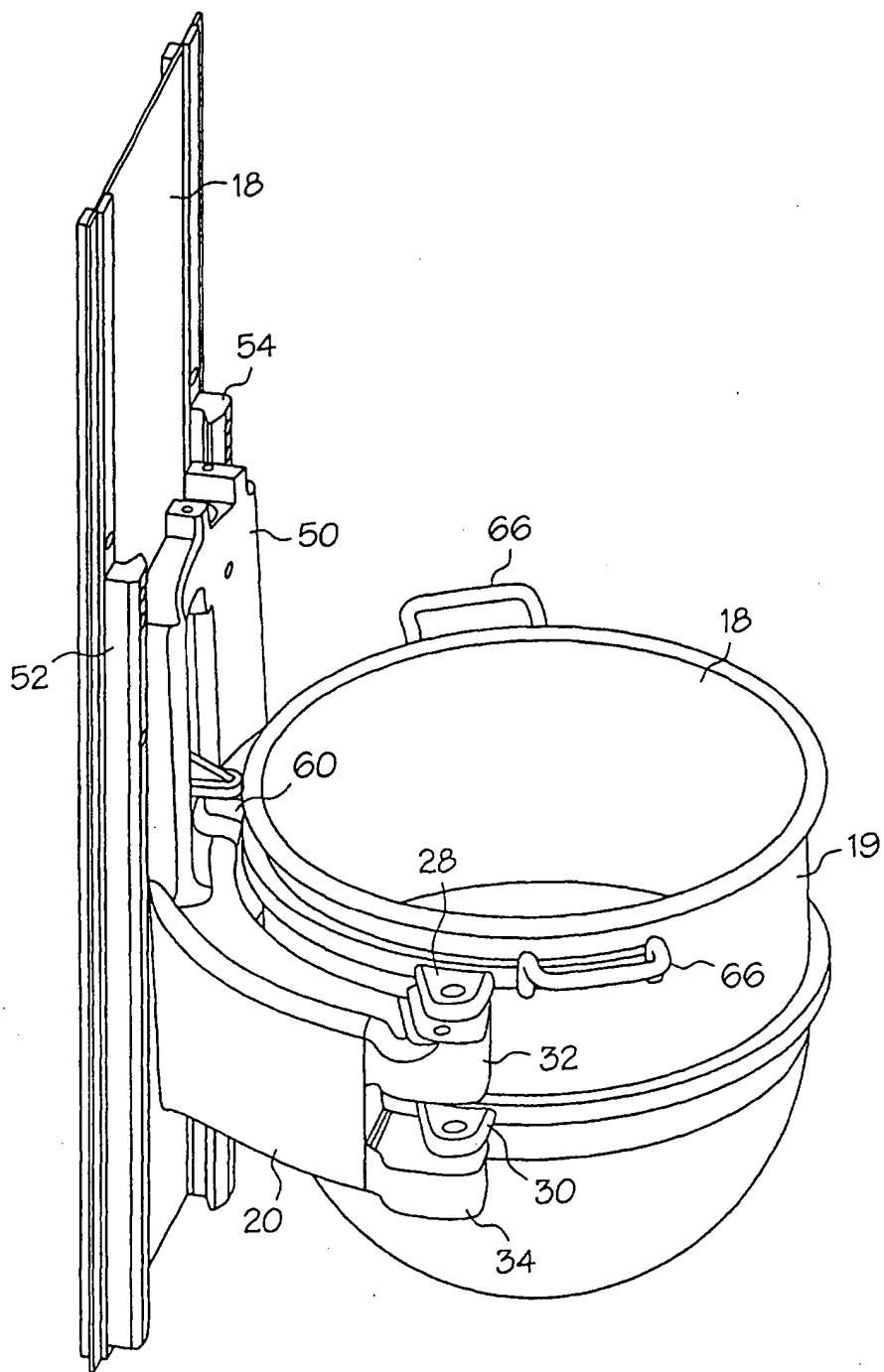


FIG. 5

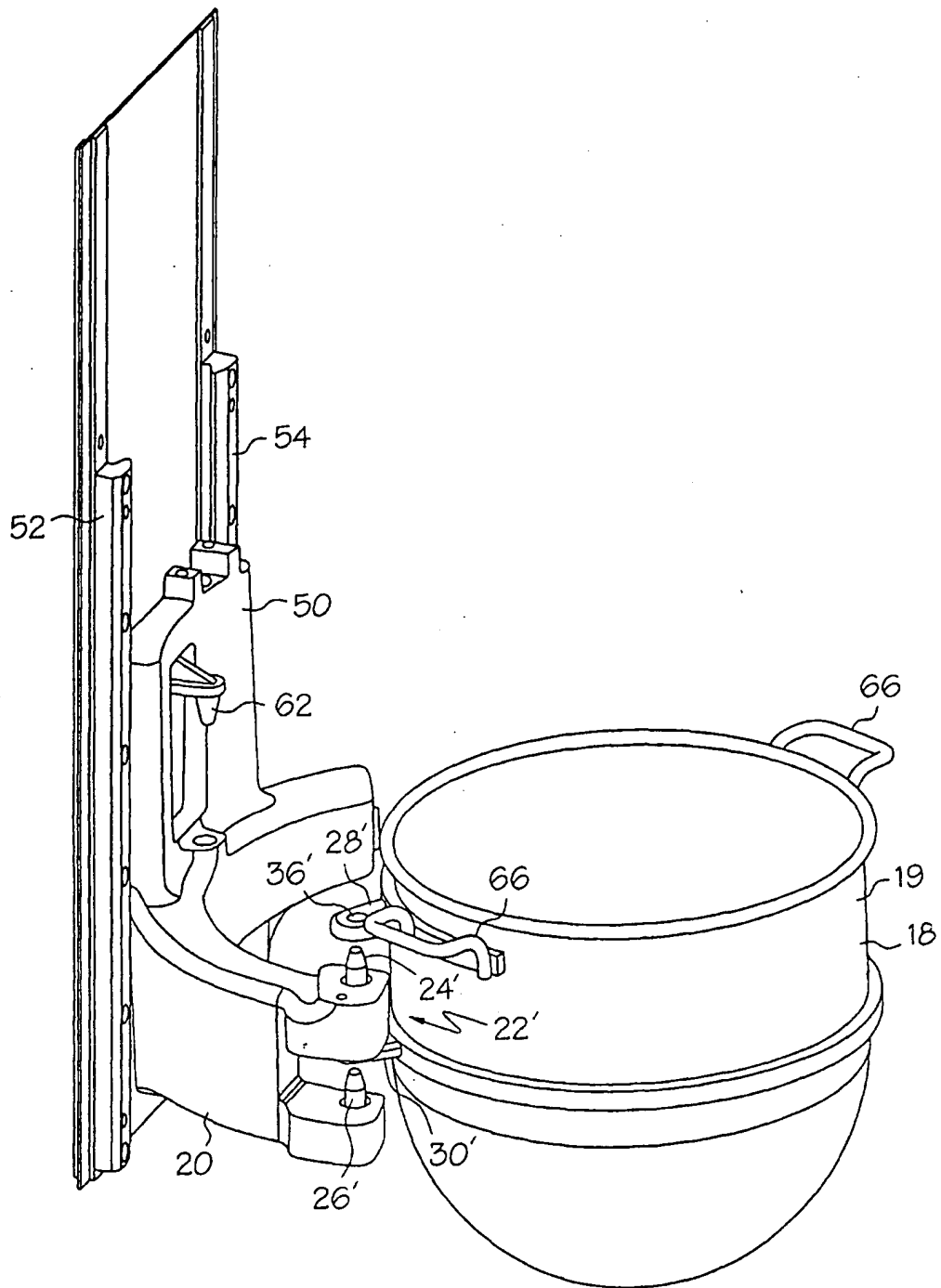


FIG. 6

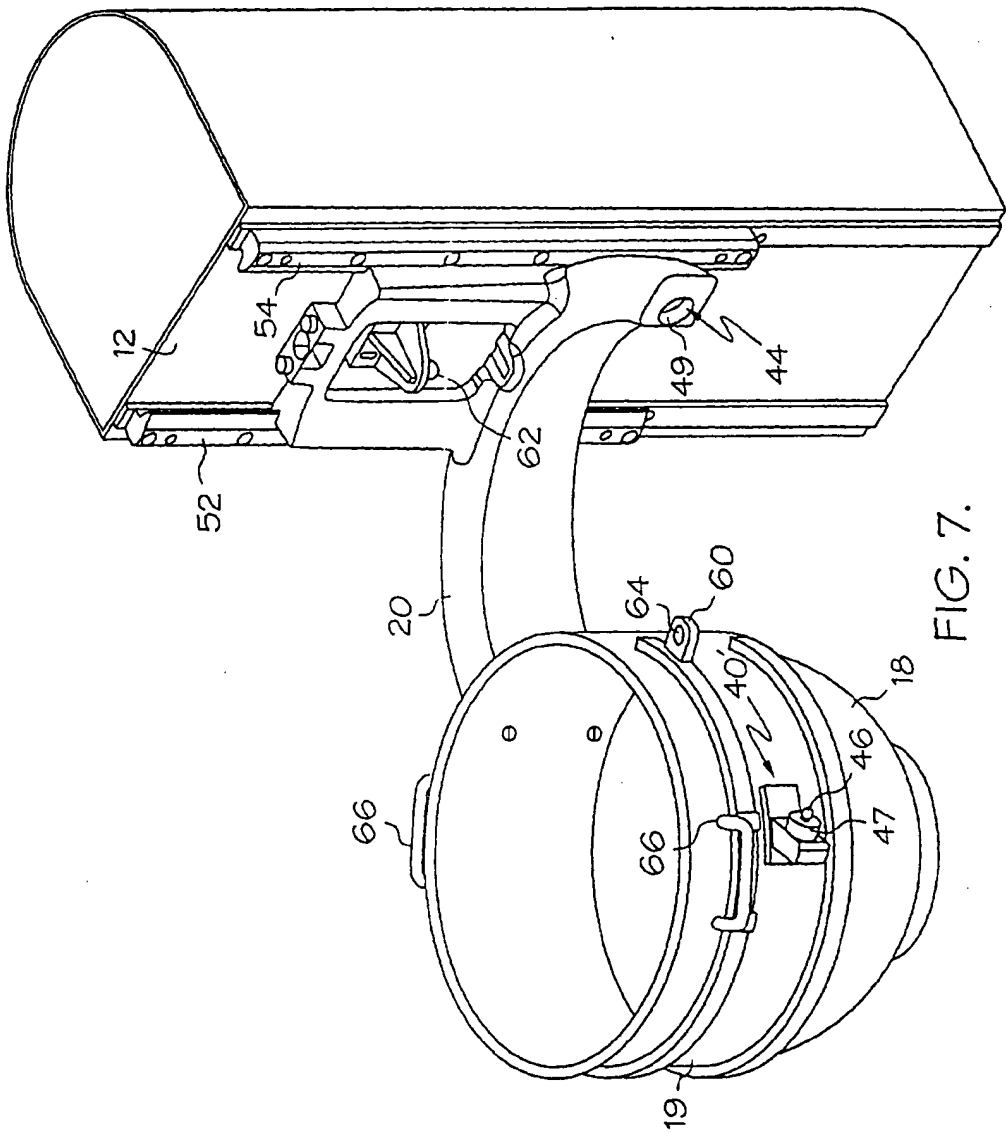


FIG. 7.